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Application No. 09/593,591
Amendment dated July 2, 2008
Reply to Office Action of April 2, 2008

REMARKS

Applicant amended independent claims 1, 85, 163, 203, 223, and 263, and added new claims 283-300 to further define Applicant's claimed invention. Support for the amendment to independent claims 1, 85, 163, 203, 223, and 263 and for new claims 283-300 can be found in the specification at least on page 9, lines 8-22 as presently amended and in FIG. 10 of the application. No new matter has been added.

In the Office Action, the Examiner objected to the specification as failing to provide proper antecedent basis for the claimed subject matter. Applicant amended the specification to provide proper antecedent basis for the claimed subject matter as recited in the claims as now amended. Applicant submits that the Examiner's objection to the specification has been overcome.

The Examiner rejected claims 1, 2, 4, 5, 7-12, 14, 16, 85, 86, 88, 89, 91-96, 98, 100, 102-105, 116, 117, 163, 164, 166, 168-173, 175, 179, 180, 203, 204, 206, 208, 209, 211, 213, 215, 223, 224, 228, 229, 231, 233, 235, 239, 240, 263, 264, 266, 268, 269, 271, 273, 275, 279, and 280 under 35 U.S.C. § 102(e), as being anticipated by International Publication No. WO 98/17209 to Pafford et al. ("Pafford") or, in the alternative, under 35 U.S.C. § 103(a) as obvious over Pafford in view of U.S. Patent No. 5,861,041 to Tienboon et al. ("Tienboon") or International Publication No. WO 99/08627 to Gresser et al. ("Gresser") or U.S. Patent No. 5,607,424 to Tropiano ("Tropiano"); rejected claims 1, 2, 4, 5, 7-20, 22, 25, 30, 32-35, 85, 86, 88, 89, 91-106, 109, 114-119, 127-129, 148, 158, 163, 164, 171, 174, 175, 179, 180, 203, 204, 206, 208-211, 213-215, 219, 220, 223, 224, 226, 228-231, 233-235, 239, 240, 263, 264, 266, 268-271, 273-275, 279, and 280 under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 6,277,149 to Boyle et al. ("Boyle") in view of Tienboon or Gresser or Tropiano; rejected claims 26-29, 110-113, 149-152, 159-162, 172, 177, 178, 182, 212, 217, 218, 222, 232, 237, 238, 242, 272, 277, 278, and 282 under 35 U.S.C. § 103(a) as being unpatentable over Boyle, Tienboon, Gresser, and Tropiano, further in view of U.S. Patent No. 5,397,364 to Kozak et al. ("Kozak"); rejected claims 36-42, 120-126, 166, 168-170, 173, 181, 206, 221, 241, and 281 under 35 U.S.C. § 103(a) as being unpatentable over Boyle,

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Tienboon, Gresser, and Tropiano in further view of the suggestions of Boyle; and rejected claims 23, 24, 107, 108, 176, 216, 236, and 276 under 35 U.S.C. § 103(a) as being unpatentable over Boyle, Tienboon, Gresser, and Tropiano, further in view of U.S. Patent No. 5,669,909 to Zdeblick et al. ("Zdeblick").

Applicant amended independent claims 1, 85, 163, 203, 223, and 263 to recite an interbody spinal fusion implant having a body and an opening coincident with the medullary canal, "a majority of said opening as measured on the mid-longitudinal axis of said body being between said leading end of said body and a plane perpendicular to and bisecting the length of said body into two parts of equal maximum length along the mid-longitudinal axis, the plane passing through at least a portion of said opening." None of the references cited by the Examiner alone or when properly combined disclose or suggest such structure.

Pafford teaches a spinal spacer (110) having an opening (130) between a leading end (115) and a trailing end (111) of the spacer. (See Pafford, FIG. 29). As admitted by the Examiner, "the farther point of chamber (130) extends 19 mm on either side of the bisecting plane." (Office Action, page 4, line 5). Thus, FIG. 29 of Pafford shows that the farthest points of chamber (130) as measured on the mid-longitudinal axis of spacer (110) are equally spaced from a perpendicular bisecting plane. Accordingly, a majority of opening (130) as measured on the mid-longitudinal axis of spacer 110 of Pafford is not between leading end (115) and a plane perpendicular to and bisecting the length of the spacer into two parts of equal maximum length along the mid-longitudinal axis as recited in independent claims 1, 85, 163, 203, 223, and 263. As such, Applicant submits that the Examiner's rejection of claims under 35 U.S.C. § 102(e) over Pafford has been overcome.

Boyle teaches an implant having an opening (26) between the leading and the trailing ends of the implant. (See Boyle, FIGS. 10-12, 19). The Examiner admits that "Boyle does not disclose that the opening can have a majority of it between the leading end and the plane bisecting the length into two equal parts as claimed." (Office Action, page 5, lines 12-14). The Examiner combines each of Pafford and Boyle with Tienboon, Gresser, or Tropiano, and contends that Tienboon, Gresser, and Tropiano "each suggest that it was known to make openings in spinal implants that are off center and closer to a

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leading edge than to a trailing edge." (Office Action, page 4, line 12-14, page 5, lines 14-16). Applicant respectfully disagrees with the Examiner's contention for at least the reasons set forth below.

Recently, in KSR International Co. v. Teleflex Inc. et al., the Supreme Court reaffirmed the framework for governing obviousness under 35 U.S.C. § 103(a) as set forth in Graham et al. v. John Deere Co. of Kansas City et al., 383 U.S. 1, 148 U.S.P.Q. 459 (1966). (See KSR v. Teleflex, 127 S.Ct. 1727 (2007)). Under Graham v. John Deere, the question of obviousness is resolved on the basis of factual determinations including (1) the scope and content of the prior art, (2) the differences between the claimed invention and the prior art, (3) the level of ordinary skill in the pertinent art, and (4) where in evidence, so-called secondary considerations. (Graham v. John Deere, at 17-18, 148 U.S.P.Q. at 467). However, even under Graham v. John Deere, a combination of references that does not teach or suggest each and every element of the claimed invention, or references that teach away from the claimed invention support a finding of nonobviousness. As discussed below, the Examiner's asserted combinations of (1) Pafford with Tienboon, Gresser, or Tropiano; and (2) Boyle with Tienboon, Gresser, or Tropiano do not teach or suggest every element recited in independent claims 1, 85, 163, 203, 223, and 263. Further, as discussed below, each of Tienboon, Gresser, and Tropiano teaches away from the claimed invention.

Applicant's independent claims 1, 85, 163, 203, 223, and 263 each recite that a plane perpendicular to and bisecting the length of the body of the implant into two parts of equal maximum length along the mid-longitudinal axis passes through at least a portion of the opening. FIG. 11 of Tienboon shows that no portion of a perpendicular bisecting plane would pass through a portion of opening (140) proximate leading end (132) of the implant. Similarly, FIG. 1A of Gresser shows that no portion of a perpendicular bisecting plane would pass through a portion of openings (18) proximate leading end (15) of the implant. Applicant notes that in Gresser, a majority of opening (19) is closer to trailing end (15) and not closer to leading end (14) of the implant. FIG. 3 of Tropiano shows that no portion of a perpendicular bisecting plane would pass through a portion of opening (44) proximate leading end (16) of the implant. Thus, even if each

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of Pafford and Boyle were to be modified by Tienboon, Gresser, or Tropiano as proposed by the Examiner, the proposed combination would not result in Applicant's claimed invention as recited in independent claims 1, 85, 163, 203, 223, and 263.

Further, Applicant submits that Tienboon, Gresser, and Tropiano teach away from the claimed invention as recited in independent claims 1, 85, 163, 203, 223, and 263. Specifically, none of Tienboon, Gresser, and Tropiano teach or suggest an "interbody spinal implant made of cortical bone" having a "body manufactured from a bone ring having a medullary canal obtained from a major long bone of a human" as recited in independent claims 1, 85, 163, 203, 223, and 263. Tienboon teaches that the implant is "made of titanium or some other biocompatible material." (Tienboon, col. 6, lines 34-35). Gresser teaches that the implant is made of polymeric resorbable materials. (See Gresser, page 3, lines 3-24). Tropiano teaches that the implant is made of stainless steel, cobalt-chromium-molybdenum alloys, titanium, or the like." (Tropiano, col. 2, line 65 through col. 3, line 6). Applicant respectfully submits that none of the openings in the implants of Tienboon, Gresser, and Tropiano are an "opening coincident with the medullary canal" as recited in independent claims 1, 85, 163, 203, 223, and 263. As identified by the Examiner, Pafford and Boyle each discloses a bone ring obtained from a long bone. Thus, Applicant submits that one of ordinary skill in the art would not be motivated to modify the implant of either Pafford or Boyle in view of the teachings of Tienboon, Gresser, and Tropiano to make an Implant having openings as recited in Applicant's independent claims 1, 85, 163, 203, 223, and 263.

Applicant submits that the rejections of claims 23, 24, 26-29, 36-42, 107, 108, 110-113, 120-126, 149-152, 159-162, 166, 168-170, 172, 173, 176-178, 181, 182, 206, 212, 216-218, 221, 222, 232, 236-238, 241, 242, 272, 276-278, 281, and 282 are rendered moot at least because these claims depend from an allowable independent claim, or claims dependent therefrom.

It is submitted that the Examiner's rejections of claims under 35 U.S.C. § 103(a) have been overcome.

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Applicant submits that independent claims 1, 85, 163, 203, 223, and 263 are patentable and that dependent claims 2, 4, 5, 7-20, 22-30, 32-42, 86, 88, 89, 91-129, 148-152, 155-162, 164, 166, 168-182, 196, 204, 206-222, 224, 226, 228-242, 256, 264, 266, and 268-300, dependent from one of independent claims 1, 85, 163, 203, 223 and 263, or claims dependent therefrom, are patentable at least due to their dependency from an allowable independent claim.

In view of the foregoing remarks, it is respectfully submitted that the claims, as amended, are patentable. Therefore, it is requested that the Examiner reconsider the outstanding rejections in view of the preceding comments. Issuance of a timely Notice of Allowance of the claims is earnestly solicited.

To the extent any extension of time under 37 C.F.R. § 1.136 is required to obtain entry of this reply, such extension is hereby respectfully requested. If there are any fees due under 37 C.F.R. §§ 1.16 or 1.17 which are not enclosed herewith, including any fees required for an extension of time under 37 C.F.R. § 1.136, please charge such fees to our Deposit Account No. 50-3726.

Respectfully submitted,

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Dated: July 2, 2008By: 

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